

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Daisuke SHIIBA, et al.  
SERIAL NO: 10/014,356  
FILED: December 14, 2001  
FOR: ACID OIL-IN-WATER TYPE EMULSION COMPOSITION

GAU: 1761  
EXAMINER:

#9  
11-20-02  
RECEIVED  
NOV 15 2002  
TC 1700

INFORMATION DISCLOSURE/RELATED CASE STATEMENT UNDER 37 CFR 1.97

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231



SIR:  
Applicant(s) wish to disclose the following information.

REFERENCES

- ☐ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☒ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the claims and drawings of the pending application(s) is attached.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

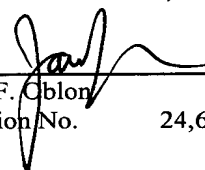
- ☐ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

  
Norman F. Oblon  
Registration No. 24,618

James J. Kelly  
Registration No. 41,504



22850

Tel. (703) 413-3000  
Fax. (703) 413-2220  
(OSMMN 10/98)

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LIST OF RELATED CASES

<u>Docket Number</u>	<u>Serial or Patent No.</u>	<u>Filing or Issue Date</u>	<u>Status or Patentee</u>
222502US0	10/131,188	04/25/02	PENDING
217199US0*	10/014,356	12/14/01	PENDING

\*Present application; listed for information.

## WHAT IS CLAIMED IS:

1. A method for activating lipid catabolism in the small intestine epithelium, which comprises administering an effective amount of a diglyceride.

5        2. The method according to claim 1, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

10       3. The method according to claim 1 or 2, wherein 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

4. A method for promoting accumulation of fatty acids into the small intestine epithelium, which comprises administering an effective amount of a diglyceride.

15       5. The method according to claim 4, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

6. The method according to claim 4 or 5, wherein 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

20       7. A method for inducing expression of a small intestine lipid metabolic gene, which comprises administering an effective amount of a diglyceride.

25       8. The method according to claim 7, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

FOR INFORMATION  
DISCLOSURE  
PURPOSES ONLY

<b>Related Pending Application</b>
Related Case Serial No: <u>0/131,188</u>
Related Case Filing Date: <u>4-25-02</u>

9. The method according to claim 7 or 8, wherein 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

10. A method for suppressing synthesis of a triglyceride in the small intestine epithelium, which comprises administering an effective amount of a diglyceride.

11. The method according to claim 10, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

12. The method according to claim 10 or 11, wherein 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

13. A method for promoting energy consumption, which comprises administering an effective amount of a diglyceride.

14. The method according to claim 10, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

15. The method according to claim 13 or 14, wherein 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

16. A method for lowering a serum RLP level, which comprises administering an effective amount of a diglyceride.

17. The method according to claim 16, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

18. The method according to claim 16 or 17, wherein 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

19. A method for lowering a serum leptin level, which  
5 comprises administering an effective amount of a diglyceride.

20. The method according to claim 19, wherein 15 to 90 wt.% of constituent fatty acids of said diglyceride comprise  $\omega$ 3 unsaturated fatty acids.

21. The method according to claim 19 or 20, wherein  
10 1,3-diglycerides in said diglyceride amount to at least 50 wt.% of the whole diglyceride.

## ABSTRACT OF THE DISCLOSURE

Disclosed are a method for activating lipid metabolism in the small intestine epithelium and also a method for promoting accumulation of fatty acids into the small intestine epithelium, each of which features administering an effective amount of a diglyceride. Ingestion of the diglyceride leads to accumulation of the fatty acids in the small intestine. The fatty acids so accumulated promote induction of  $\beta$ -oxidation, thereby not only activating lipid catabolism but also making it difficult to allow lipids to accumulate as triglycerides. This series of actions eventually results in development of lowering action for blood remnant-like lipoprotein level and also lowering action for blood leptin level, and hence, lipid metabolism is improved. Further, energy consumption is enhanced by promoting the induction of  $\beta$ -oxidation and activating lipid catabolism.



FIG 1

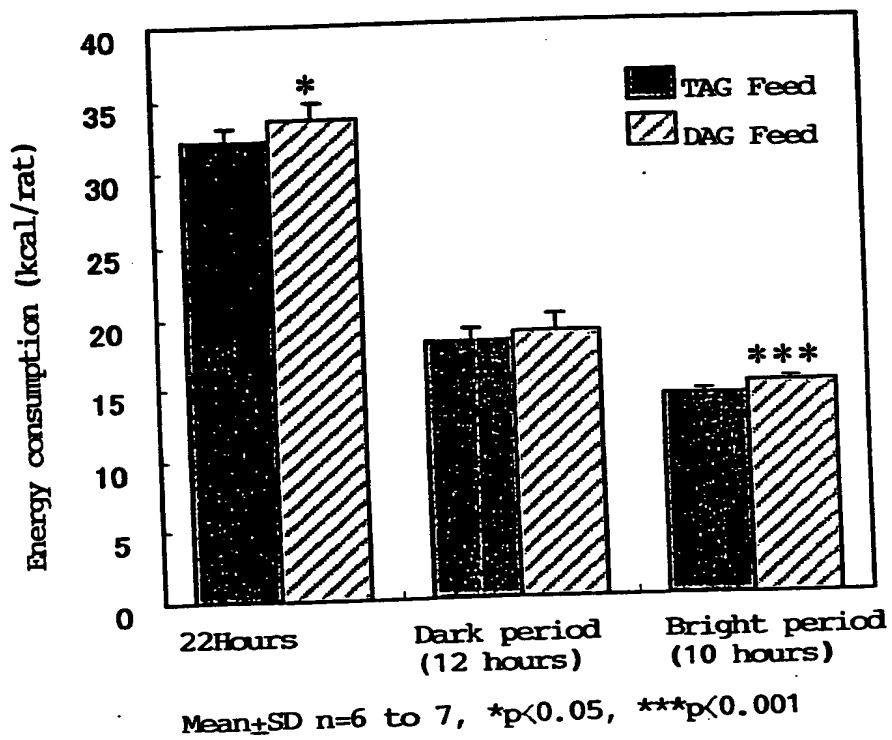
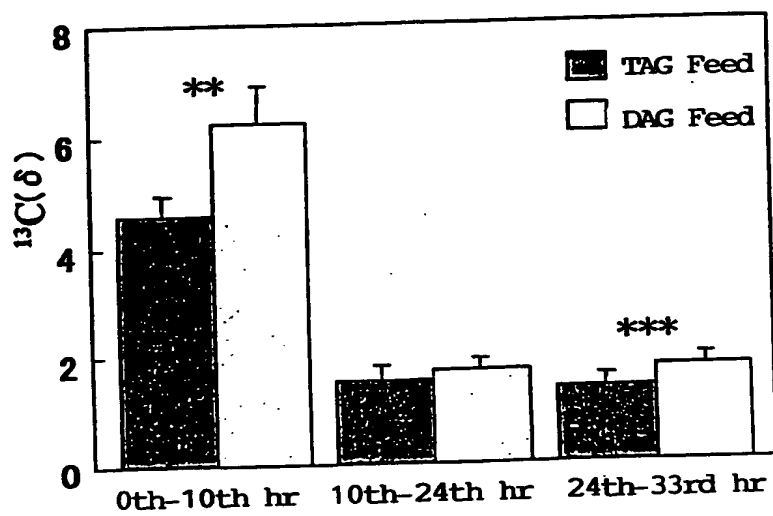




FIG 2



Mean  $\pm$  SD, n=8 per group

Significance between 2 groups \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$

FIG. 3A

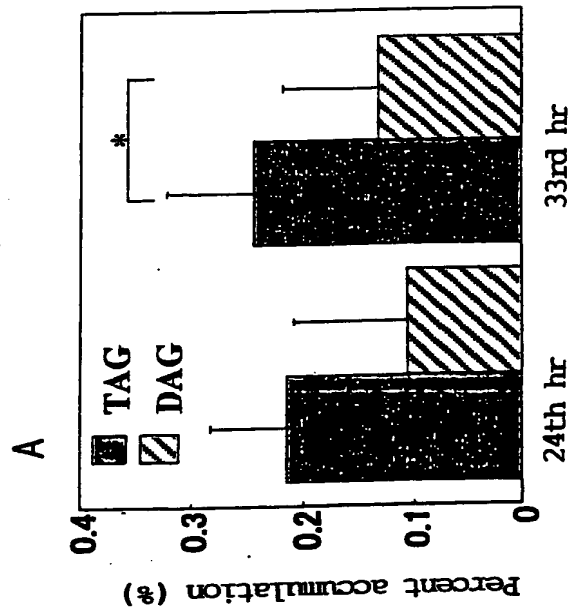
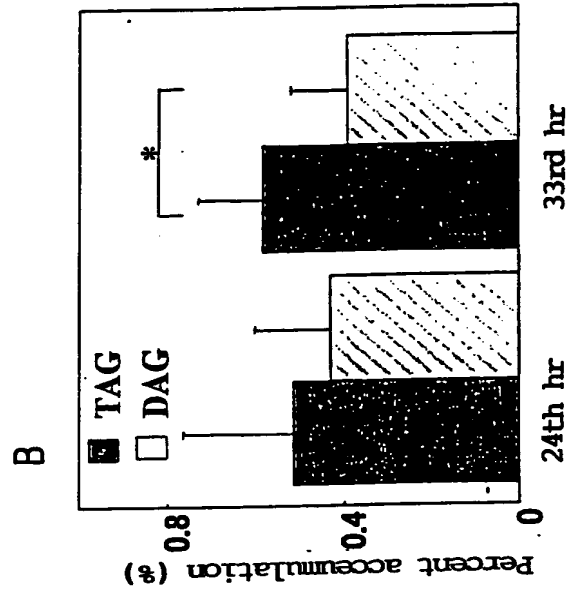


FIG. 3B



\*p < 0.05 (significance between 2 groups) (n=6 per group)

\*p < 0.05 (significance between 2 groups) (n=6 per group)

